### Course Planning Guide

**for Bachelor of Science in Engineering (BSE) entered 2017 or later**

**41 CU TOTAL**

#### COURSE SELECTION

<table>
<thead>
<tr>
<th>MATH (4 CU)</th>
<th>ENGINEERING (15 CU)</th>
<th>TECH ELECTIVES (4 CU)</th>
<th>SSH (7 CU)</th>
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<td>☐ ENGR 1050</td>
<td>☐ ENGINEERING_________</td>
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<td>☐ CBE 1600</td>
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<td>☐ NATURAL SCIENCE (8-9 CU)</td>
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<td>☐ CBE 4100</td>
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<td>☐ CBE ___________ c</td>
<td>☐ SS or H ___________</td>
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#### NOTES:
- □ Depth (from SSH)
- □ Writing req't (from SSH)
- □ 0150/0151 exempts student 1 TECH ELEC
- □ Ethics req't/ EAS 2030
- □ CBE 3000+ FREE ELECTIVES (3 CU)
- □ CBE 4790 is pre-requisite
- □ CBE 4790 is pre-requisite

#### SEMESTER PLANNING

<table>
<thead>
<tr>
<th>TERM</th>
<th>MATH &amp; NAT SCI</th>
<th>ENGINEERING</th>
<th>COMP &amp; TECH ELEC'S</th>
<th>SSH &amp; FREE ELEC'S</th>
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#### CORE COURSE TITLES

- CBE 1500 - Fund. of Biotechnology
- CBE 1600 - Intro to Chemical Eng.
- CBE 2300 - Mat. & Energy Balances
- CBE 2310 - Thermodynamics
- CBE 3500 - Fluid Mechanics
- CBE 3610 - Separ. Processes
- CBE 4000 - Intro to Product Design
- CBE 4100 - Chem. Eng. Lab
- CBE 4450 - Chem. Rec. Design
- CBE 4790 - Biotech. & Biochem. Eng
- CBE 4800 - Lab in Biotech. & Gen. E
- CHEM 1012
- CHEM 1101
- CHEM 1022
- CHEM 1102
- PHYS 0140 or PHYS 0150^b
- PHYS 0141 or PHYS 0151^b
- CHEM 2210 or MSE 2210
- CHEM 2410
- CHEM 2420 or CHEM 2510 or CHEM 2425
- CHEM 1022
- PHYS 0140 or PHYS 0150^b
- CHEM 2420 or CHEM 2510
- CBE 3600
- CBE 3710
- CBE 4000
- CBE 4100
- CBE 4510
- CBE 3500
- CBE 3510
- CBE 3530
- CBE 4000
- CBE 4100
### OTHER COURSE TITLES

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<th>Course Code</th>
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<td>CHEM 1101</td>
<td>Intro Chem Lab I</td>
<td>CHEM 2420</td>
<td>Principles of Orgo II</td>
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<tr>
<td>CHEM 1102</td>
<td>Intro Chem Lab II</td>
<td>CHEM 245</td>
<td>Experimental Orgo I</td>
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<tr>
<td>CHEM 1012</td>
<td>General Chem I</td>
<td>CHEM 2510</td>
<td>Prin. of Biological Chemistry</td>
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<tr>
<td>CHEM 1022</td>
<td>General Chem II</td>
<td>CIS 1100</td>
<td>Intro. to Comp. Prog. (w/ Java)</td>
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<tr>
<td>CHEM 2210</td>
<td>Physical Chemistry I</td>
<td>CIS 1200</td>
<td>Prog. Languages &amp; Techniques</td>
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<td>CHEM 2230</td>
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<td>ENGR 1050</td>
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<td>MATH 1400</td>
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### THE WRITING REQUIREMENT

Students are strongly encouraged to fulfill the Writing Requirement during the first two years of study because it becomes increasingly difficult to schedule first-year courses as one moves through the curriculum.

The Writing Requirement differs somewhat between each of the four undergraduate schools at Penn. For Penn Engineering students, the requirement can be satisfied by taking a course with the prefix **WRIT**.

### SOCIAL SCIENCE AND HUMANITIES COURSES

The depth requirement: a student should choose courses of personal interest which will provide in-depth study (two or more courses) of at least one subject in any SSH category.

**Approved Social Science (SS) Departments:**

- Asian American Studies
- Communications
- Criminalology
- Economics
- GSOC
- Health and Societies
- International Relations
- Linguistics
- PP&E
- Political Science
- Psychology
- Sociology
- Science Technology and Society
- Urban Studies
- Women’s Studies

**Approved SS Courses Offered outside of SAS:**

- CIS 355, 590; EAS/BE 303; LGST 101, 210; FNCE 101, 103; BPPUB 201, 250; NURS 333, 533

**Approved Humanities (H) Departments and Courses:**

- African Studies
- Africana Studies
- Anthropology
- Ancient History
- Architecture
- Art and Archeology of the Mediterranean World
- Art History
- Asian American Studies
- Cinema Studies
- Classical Studies
- Comparative Literature and Literary Theory
- East Asia Languages and Civilizations
- English
- Fine Arts
- Folklore
- Germanic Languages
- History
- History and Sociology of Science
- IPD
- Jewish Studies
- Latin American and Latino Studies
- Music
- Near Eastern Languages & Civilizations
- Philosophy
- Religious Studies
- Romance Languages
- Slavic Languages
- South Asia Studies
- Theatre Arts

Additionally, any foreign language course and any of the following courses will fulfill this requirement: CIS 106; EAS 009, 200, 310.

**Approved Substitutions:**

Up to two SSH courses may be substituted from the "Technology in Business and Society" course category.

These are limited to: BE 280, 503; CIS 125, 355, 590; EAS 9, 125, 280, 345, 346, 348, 349, 400, 401, 402, 445, 446, 448, 449, 500, 502, 548; IPD 549, MEAM 399, and MSE 266.

### TECH ELECTIVES

Technical Electives must be chosen from Math, Natural Science, or Engineering courses (NOT EAS). Any course not chosen from these categories must be approved by petition.

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*CHEM continued from front:* EAS 091 is acceptable in this department, but it is not equivalent to CHEM 101. Therefore, pre-med students or students who might transfer out of CBE will still need CHEM 101 credit. We highly recommend taking the placement test regardless.

1unless cross-listed w/AMES, ENGL, FNAR, HIST, or SAS; 2except stats., probability, & math courses; 3except language courses

4Design of the Environment; 5cross-listed with AMES, ENGL, FNAR, HIST, or SAS only; 6except logic courses 005 & 006